What is Memento

Memento - is a set of libraries containing all kinds of entries. Every entry consists of fields of certain types. While creating a library, you select what fields entries will consist of.

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Creating libraries

To store entries of a new type, you need to create a new library:

- Open the menu in the home screen and select **Add library**.
- You will be offered to select a template for the library.
- You can use a ready template already containing sets of entry fields to create a library.
- Or you can select the **Empty library** template and create all library fields yourself.
- Also you can select a template from the online catalog.
- You can edit and customize the ready templates as well as the **Empty library** template.
- After you select the template, you will see the screen where you can edit the library.
- The new library already contains the set of fields from the selected template.

Online catalog of library templates.

You can create libraries using templates that other users have uploaded to the online catalog. For that purpose, when creating a library, on the template list select: **From online catalog**.

If you would like to share your template with friends, you can publish it in the online catalog. For that purpose, open the library editor screen and then click on the **Share** menu item.

Defining the structure of the library

You can add, edit, delete library fields and change their order.

To add a field, select **Fields** tab and touch the **+** button. After that you will see the dialog where you can select the field type.
The data that can be entered into a field depends on its **type**. You can create fields of up to **19 different types**.

Display in the list

Many fields have an additional important parameter: **Display in the list as**.
This parameter determines how the value of this field will be displayed in the list of library entries.

When you open a library, you see the list of its entries and each entry consists of three areas:

- The values of fields with the **Entry name** option are displayed in 1.
- The values of fields with the **Entry description** option are displayed in 2.
- The values of fields with the **Entry status** option are displayed in 3.
- Thumbnail (4) is only for fields of type "Image".

The values of fields with the **Regular field** option are not displayed in the entry list and you can see them only on the entry card.

Mass Calculations

You can add simple mass functions to the library. The added function will be performed over the values of a certain field for all the records of the library.
To add a function, select **Aggregation** tab and click the **+** button.
You can select one of the four functions, each of which can be applied to just certain types of fields:

- Sum – available to numeric fields and time.
- Maximum and minimum – available to numeric fields, time and date.
- Average – available to numeric fields and time.

Fields can be edited quickly

The values of certain types of fields can be changed directly from the entry list, tables or maps.
The option **Where you can edit** that is located on the Options screen of the field defines the area where the value of this field can be changed.
Quick editing is supported for the following types of fields: Checkbox , Single-choice list, Multiple-choice list.

Entry color

Each value of the **Single-choice list** field can be associated with a particular color. For a library, a field is selected (edit library > facade> color of entry). The entry color will depend on this field.
The entry color is used to mark entries in lists and tables.
This color is also used to color entry markers on a map and the corresponding entries of time intervals in the calendar.

Calculation field

The values in the calculation fields are calculated from the expressions specified by you.

The following types of expressions are supported:

- Mathematical - Expression involving numbers.
- String - String can also be added together, compared, etc...
- Boolean - Expression that evaluate to true (1.0) and false (0.0).

Numeric and string types can not be mixed in a left / right operand pair. Use

Variables

Variables are values of other fields in the same record.
Variable must be enclosed by a pound sign and open brace #{ and a closed brace }.
i.e. expression = "#{field_name1} + #{field_name2}"

String values/variables must be enclosed by Quote characters:
Example: 'Result: ' + '#{string_field1}' + '#{string_field2}'

Operators

The following operators are supported:

- (open parentheses
-) closed parentheses
- + addition (for numbers and strings)
- - subtraction
- * multiplication
- / division
- % modulus
- == equal (for numbers and strings)
- != not equal (for numbers and strings)
- < less than (for numbers and strings)
- <= less than or equal (for numbers and strings)
- > greater than (for numbers and strings)
- >= greater than or equal (for numbers and strings)
- && boolean and
- || boolean or
- ! boolean not

Result type

For each calculation, there must be a correct result type set:

- "Real result" and "Integer result" are used for expressions with numerical result.
- "Date/Time result" is used to represent the result in form of date and time. The calculation result is interpreted as the number of seconds that has passed since January 1, 1970 (UNIX time).
- "Date result" is the same as the previous type, but displays only the date.
- "String result" is used for expressions that contain string manipulations or functions that return a string.

Link to entry

Use the following syntax to get access to the values of entry fields like **Link to entry**:
#{field_name.child_field_name}
where *field_name* – name of field like **Link to the entry**, *child_field_name* – name of one field of a related entry.

If a field like **Link to the entry** contains several links, then use index (starts from zero) to get access to them:
#{field_name@0.child_field_name}, #{field_name@1.child_field_name}, …

You can specify one of the supported **aggregation** functions instead of the index:
#{field_name@sum.child_field_name} – returns the sum of values of field *child_field_name* for all entries included into *field_name*.
In addition, the following functions are supported: avg, min, max.

#{field_name@size} – returns the number of entries in field *field_name*.

Examples

Example 1:
Entries contain fields: Price, Count
We add a calculating field "Sum" by using the following expression:
#{Price}*#{Count}

Example 2:
Entries contain fields: Count, Total
We add a calculating field "Percentage" by using the following expression:
(#{Count } / #{ Total }) * 100

Example 3:
Entries contain fields: StartDateTime, EndDateTime
We add a calculating field "Duration" by using the following expression (result is number seconds):
#{EndDateTime} - #{StartDateTime}

Example 4:
Entries contain fields: StartDate, EndDate
We add a calculating field "Days" by using the following expression:
datediff(#{EndDate} , #{StartDate})

Example 5:
Entries contain fields: Time
We add a calculating field "Days left" by using the following expression:
if(#{Time} > now() , rint((#{Time} - now())/(60*60*24)) , 'in the past')

Example 6:

There's library *Order* – with orders and library *Item* – with items.
Library *Order* contains a link to library *Item* and numeric field *Count*.
Library *Item* contains field *Price*.
To calculate the cost of the order, let's add calculable field *Sum* using the following formula: #{count} * #{item.price}

If an order can make a reference to several different items, their total cost can be calculated: #{item@sum.price}
The most expensive item: #{item@max.price}
The cheapest item: #{item@min.price}
The average price for the item: #{item@avg.price}

Notes

Variable names can not break any of the following rules:

- can not start with a number
- can not contain an operator (see the above list of operators)
- can not contain a quote character - single or double
- can not contain a brace character - open or closed
- can not contain one of the following special characters: #, ~ , ^ !

Notes on expression parsing:

- Spaces are ignored when parsing expressions.
- The expression is evaluated as one or more subexpressions. Subexpressions within open parentheses and closed parentheses are evaluated before other parts of the expression.
- Subexpressions at the same level are evaluated from left to right.
- Operators with with the same precedence are evaluated from left to right.

Library protection

Memento lets you restrict the access to libraries by using password protection, as well as encrypt entries using **AES-128**.
A single **master password** is used for restricting the access to libraries.

To protect a library, do as follows:

1. Open the Library menu and select **Set up protection**.
2. If you haven't set up a **master password** yet, you'll be suggested to enter one.
3. Enable/disable library encryption and click on the OK button

Now, when opening a protected library, you will have to enter the **master password** (if it wasn't entered yet).

Please note:

- In an encrypted library, **only string fields** of the entries are **encrypted**.
- If you forget your **master password**, it will be impossible to recover it, and you will not be able to decrypt your data.
- An encrypted library cannot be published on the Memento server.
- If the Memento application is unused for 5 minutes, the access to all protected libraries will be closed automatically.
- To reopen the access, you'll have to reenter the **master password**.

Working with library entries

The contents of a library are displayed as a list of entries. A click on an entry opens its card with the list of fields and their values.

Editing entries

To edit an entry, open its context menu and select **Edit** or open the menu in the entry card and select **Edit icon**

Deleting entries

To delete an entry, open its context menu and select **Delete** or open the menu in the entry card and select **Delete**

After you delete an entry, it gets into the **Recycle Bin** of its library and can be restored at any moment.

Sorting

The list of entries can be sorted by any of the entry fields available for sorting.

To specify the field to sort entries by, open the side menu of the library (swipe the screen left to right) and then select **Sort**.

Grouping

You can group all entries in the library by some field.

To specify the field to group entries by, open the side menu of the library (swipe the screen left to right) and then select **Group**.

To get back to the usual entry list, select the **No grouping** option in the dialog box where you select the field to group entries by.

Alternative forms of representation

Apart from list, the following display views are supported: table, map and calendar. To change a display view, open the slide menu of the library and select **View**.

Table

In this display view, the entry fields are presented as columns, and entries as rows.

To resize columns, click on the column header.

To hide any column, click on the button in the top left corner of the table, and uncheck the appropriate field in the field list that appears.

Map

This representation is available if the library contains a Location field. The library entries are displayed as markers on the map.

Calendar

In this display view, all library entries are represented as time intervals on the calendar. The calendar is available for libraries that contain at least one Date/Time field.

The time interval is determined by the value of one or more entry fields. The following types of fields can be used to determine the time interval (see the option "Use in Calendar as" in the field settings):

- Date/Time may be the start or end of a time interval, depending on the value of the option "Use in Calendar as".
- Time and All numeric fields can be used to set the duration of the time interval.

By default, the value of the first Date/Time field is used as the default start of the time interval, while 1 hour is set as the duration.

Entry search

Memento allows you to search for entries by the values of their fields. You can search through all libraries or only in one library.

The program searches through words present in entries.

You can use wildcard characters in a search query:

- * - You can use the asterisk to substitute for any characters.
- For example, if you search for **gloss***, all entries containing words beginning with **gloss** will be found.

The query syntax supports the **OR** binary set operator. Operator must be entered using capital letters.

- For example, if you search for **sqlite OR database**, all entries containing words **sqlite** or **database** will be found.

The query syntax supports a unary **"-"** operator that may be applied to basic term and term-prefix queries.

- **sqlite -database** - Search for the set of entries that contain the term **sqlite** but do not contain the term **database**.

Sending entries via SMS, E-mail

You can send an entry as a text or e-mail message. To do it, open the entry card and select **Send** on the menu.

Cloud storage & Teamwork

All your libraries can be stored in the cloud. All your entries, photos and files will be synchronized automatically.

Upload library

To upload library to the cloud, open the side menu of the library (swipe the screen left to right) and then select **Cloud**.
If you are not registered on the Memento server yet, you will be offered to do it, and after the registration the library will be uploaded to the cloud.

Sync libraries between devices

Upon uploading the library to the cloud you can have access to it from any Android device.
Follow these instructions to download a library to a new device:

- Open the main side menu of the application and choose **Cloud storage**.
- You will see a list of all your libraries uploaded to the cloud; choose the library you want to download to your device.
- Click on **Download library**.
- Now you have a locale of the library on your device. It will be automatically synchronized with the cloud.

Teamwork

You can provide access to your libraries to other users.
You can entitle any user to have an access to your library entries.
The following types of rights are supported: read, create, edit, delete.
In addition, you can give rights to edit and delete only entries created by the user.

Follow these instructions to provide an access to your libraries:

- Open the side menu of the library (swipe the screen left to right) and then select **Cloud**.
- Click on **Add people**.
- Enter the user's name or e-mail.
- Adjust access rights and click **Ok**
- After that this user will be able to download your library to his/her device.

Follow these instructions to download the library to which you have an access

- You will receive a letter containing the address of the library, as soon as you are provided with an access to it. Click this address (it starts with **http://libs.mobi/...**), but instead of your browser you should choose Memento Database to open the link.
- You will see a screen with information about the library; now click **Download library** to download the library to your device.
- You can also open the screen of library download directly in Memento: open the menu, choose **Open by URL** and enter the library address.

You can always see the list of libraries to which you have an access.

Just open the main side menu and choose **Cloud storage**. All libraries, access to which was given to you by other users will be displayed in the **Shared with me** list.

Notes

- You can work with your libraries offline, your data will be uploaded to the cloud as soon as your device is connected to the Internet.
- The size of your cloud storage is 50Mb. You can get additional space if you subscribe for any tariff plan.
- Memento Server is based on Google Cloud platform. All your data are stored in Google Cloud Storage. Interaction between the application and the cloud is protected by cryptographic protocol TLS.

Importing and exporting CSV files.

Importing entries from a CSV file.

To import data from **CSV files**, do the following:

1. Copy the file you want to import to the sd-card.
2. Open the Library menu and select **Import and export...** > **Import from CSV**.
3. Select CSV-file from file manager.
4. After you select the file, you will see the list of columns found in the file which correspond to the entry fields.
5. Press the **Import** button.

When you import data from CSV files, new entries are created each time.

CSV file format.

The name of a column must correspond to the name of an entry field.

The file must contain a column with the field that is the name of the entry.

The file must be encoding in UTF-8.

Memento allows you to import only fields of certain types: text, integer, real number, date, date/time, rating, currency, single-choice list, multiple-choice list, location, boolean, hyperlink.

Data format notes:

Field type	Format and notes
Date	The date must be in the same format as in the system settings. You can review and modify the date format required for importing in the application's general settings.
Date/Time	The values are separated with a space, the date comes first and then comes time in the HH:MM format.
Single-choice list	The value being imported must already be in the parameters of the corresponding field.
Boolean	The following values are acceptable for the truth value: true, yes, 1
Location	"latitude,longitude"
Rating	A number from 0 to 5.

Before you import entries, it is recommended to back up your libraries.

Exporting data to CSV

To export data to a **CSV file**, do the following:

1. Open the Library menu and select **Import and export...** > **Export to CSV**.
2. Enter the name of the CSV file and press the **OK** button.

Barcode scanner

Memento allows you to scan barcodes and use them to search for information about products on the Web. Data retrieved from **Data Source** can be added to entry fields. **Memento** supports the following data sources: **Amazon**. Later will be added other data sources.

To be able to **use barcodes** for identification and entry field completion, you should add a **field of the barcode type** to the library.

You can also use a **barcode scanner** to locally search for entries. To do it, select **Barcode search** on the menu.

Configuring field autocompletion

While adding the **Barcode** field, you can create **rules for completing entry fields**. Completion rules are a list of links between product attributes from **Data Source** and fields from the current library.
List of autocompletion rules is defined on the **Autocomplete** tab.

Synchronization with Google Docs

Synchronization with Google Sheets

Edit and view memento entries via **Google Sheets**.

How synchronization works:

1. Link the library to a sheet in Google Spreadsheet. To do it, open the library, open the menu and select **Link to Google Sheets**
2. If you want to create a new Google spreadsheet with records from the Memento library, select **Link to new document**.
3. Select **Link to existing** document if you already have an earlier created Google spreadsheet with data that you want to link to your Memento library.
4. Please note: When linking the library to an existing Google spreadsheet, the data is transferred in just one direction - either from Memento to Google or from Google to Memento.
5. After you link it, a spreadsheet containing all library entries will appear in the list of **Google Sheets** documents. You can use **Google Sheets** to view, edit, add and delete entries.
6. To synchronize changes made in **Memento** and **Google Sheets**, open the library menu and select **Sync with Google Sheets**.

Synchronizing files (images)

Synchronization of files attached to records (images, audio recordings, etc.) is turned on when connecting with a Google spreadsheet, or in the library settings.

- All files of a library are uploaded to **Google Drive**, in a folder called **Name_library.files**

- Links to uploaded files are saved in a column of the Google spreadsheet with the name **Name_field.http**

Restoring the library from Google Sheets

You can restore libraries that have been synchronized with **Google Sheets**.
To do this, open the menu in the home screen and select **Add library**. On the list of templates that opens, select **From Google Drive**.
Then you will see all the libraries synchronized with the current Google account. After selecting a library, it will be created on your mobile device and will receive all the data from the linked Google spreadsheet.

Synchronization between two or more devices

Using synchronization with **Google Sheets**, you can synchronize library data on multiple devices.
On all devices, select the exact same Google account. On the main device, synchronize the library with **Google Sheets**.
On the other devices, download the library, as described in section "Restoring the library from Google Sheets"

At this point in the library restructuring process, changes on one of the devices (for example adding new types of fields) are not transferred to the other devices. You need to repeat the procedure for linking libraries for all the other devices.

Notes

- In the Google table will be created additional column **MEMENTO_ID** for matching rows in a table with the entries in Memento. Don't modify or delete this column.
- Locale on your device should match the locale in Google Sheets.
- If you edit the same entries in **Memento** and **Google Sheets**, you will be offered to choose which version is correct.
- Whenever you add a new field for synchronization, the sheet in Google Docs is created anew.
- All entries in the **Google Spreadsheet** sheet should follow one after another. There should be no empty rows.
- Memento allows you to synchronize only fields of certain types: text, integer, real number, date, date/time, rating, currency, single-choice list, multiple-choice list, location, boolean, hyperlink, barcode.

Charts

You can visualize your data using different graphics. Memento supports the following types of graphics: Pie, Line, Bar, Columns, Area, Scatter, Stepped Area.

How to build a chart

- Open the side menu of the library (swipe the screen left to right) and then select **Charts**.
- Press **+** and select the type of the chart you want to build; this opens the chart settings screen.
- Select the fields of the library, the values of which will be used for building the chart.

Charts are built using Google Charts API and HTML5. Google Charts API requires an active connection to the Internet for downloading JavaScript functions for building charts.

All code and data are processed and rendered in the browser. No data is sent to any server.

Pie Chart

Data sources:

- *Category:* Field, the values of which are sectors on a pie chart.
- When category is a field of date or date/time type, the values can be grouped by hour, date, month or year.
- *Values:* record number or numeric field that define sector size.
- *Function:* Defines sector size calculation method. The default function is **Sum**. Sector size equals the sum of all value fields of the category's records.

Example:

Library: Tasks

Objective: Show number of tasks by priority.

- *Category:* Priority
- *Values:* Number of entries

Line Charts / Area Chart

Data sources:

- *Axis X:* Field of values to be placed on axis X.
- *Axis Y:* Field of values that define the point the chart line will go through.
- *Function:* Defines method for calculating the value on axis Y. The default method is **Sum**. The value on axis Y for X equals the sum of all Y-fields in the records with X-field equal to X.
- *Series:* Used for building charts with multiple lines. The value of this field defines the line a certain record belongs to.

If the X-field is a number or date, you can specify axis type – *discrete* or *continuous*.

Discrete axis contains only those X values that are present in the records.

Continuous axis contains all values of type X in ascending order.

For example, if the type of a field X is numeric and the library contains records with values 1,4,7.

The discrete axis will appear as: 1,4,7

The continuous axis will appear as: 1,2,3,4,5,6,7,8,9

Example:

Library: Purchases

Objective: Show amounts of funds spent by day.

- *Axis X:* Purchase Date
- *Axis Y:* Price

Bar Chart / Column Char

Data sources:

- *Columns:* Field the values of which are bars on the chart.
- *Values:* Field the values of which define the size of the bar.
- *Series:* Field for splitting records into individual data sets. Each data set will have its own bar for the respective value of the bar field.

Example:

Library: CD Collections

Objective: Show the number of disks bought each month grouped by genre.

- *Columns:* Purchase Date, Group by month
- *Values:* Number of entries
- *Series:* Genre

Scatter Chart

A scatter chart is used to map correlation between sets of numbers. Each record of the library will be presented on the chart as a point.

Data sources:

- *Axis X:* Field for defining the coordinate of the point on axis X
- *Axis Y:* Field for defining the coordinate of the point on axis Y.